the nitric acid does not undergo electrolysation, but the water only; that the oxygen at the *anode* is always a primary result, but that the products at the *cathode* are often secondary, and due to the reaction of the hydrogen upon the nitric acid.

488. *Nitre.*—A solution of this salt yields very variable results, according as one or other form of tube is used, or as the electrodes are large or small. Sometimes the whole of the hydrogen of the water decomposed may be obtained at the negative electrode; at other times, only a part of it, because of the ready formation of secondary results. The solution is a very excellent conductor of electricity.

489. *Nitrate of ammonia,* in aqueous solution, gives rise to secondary results very varied and uncertain in their proportions.

490. *Sulphurous acid.*—Pure liquid sulphurous acid does not conduct nor suffer decomposition by the voltaic current,[1] but, when dissolved in water, the solution acquires conducting power and is decomposed, yielding oxygen at the *anode,* and hydrogen and sulphur at the *cathode.*

491. A solution containing sulphuric acid in addition to the sulphurous acid was a better conductor. It gave very little gas at either electrode: that at the *anode* was oxygen, that at the *cathode* pure hydrogen. From the *cathode* also rose a white turbid stream, consisting of diffused sulphur, which soon rendered the whole solution milky. The volumes of gases were in no regular proportion to the quantities evolved from water in the voltameter. I conclude that the sulphurous acid was not at all affected by the electric current in any of these cases, and that the water present was the only body electro-chemically decomposed; that, at the *anode,* the oxygen from the water converted the sulphurous acid into sulphuric acid, and, at the *cathode,* the hydrogen electrically evolved decomposed the sulphurous acid, combining with its oxygen, and setting its sulphur free. I conclude that the sulphur at the negative electrode was only a secondary result; and, in fact, no part of it was found combined with the small portion of hydrogen which escaped when weak solutions of sulphurous acid were used.

492. *Sulphuric acid.*—I have already given my reasons for concluding that sulphuric acid is not electrolysable, *i.e.* not

decomposable directly by the electric current, but occasionally suffering by a secondary action at the *cathode* from the hydrogen evolved there (416). In the year 1800, Davy considered the

[1] See also De la Rive, *Bibliothlque Universelle,* torn. xl. p. 205; or *Quarterly Journal of Science,* vol. xxvii. p. 407.